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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,724	10/04/2000	Steven Treiber	1086.1011.001	6428

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EXAMINER	
PHAM, THOMAS K	

ART UNIT	PAPER NUMBER
2121	10

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/678,724	Applicant(s) TREIBER ET AL.	
	Examiner Thomas K Pham	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 October 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☒ Claim(s) *19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4,5,7,9*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Notice to Applicant(s)

1. Claims 1-20 of U.S. Application 09/678,724 filed on 10/04/2000 are presented for examination.

DETAILED ACTION

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardner U.S. Patent no. 5,402,333.

Regarding claim 1

Cardner teaches computer apparatus for determining state of physical properties of a chemical process: steady state modeling means for rigorously modeling a chemical process at steady state, the chemical process including physical properties, said steady state modeling means providing values for the physical properties at steady state based on a rigorous model of the chemical process (col. 6 lines 40-61, "Input to the simulation ... first-principles model is adequate") but does not specifically teach an inferential model means coupled to receive the values of the physical properties at steady state from the steady state modeling means, the inferential model means for determining state of the physical properties over a period of time based on values of the physical properties at steady state. However, Cardner teaches the product property estimates

117 coupled to receive values from the simulation model 110 to produce a corrected stream composition/product property over a period of time based on the model at steady state (col. 13 lines 46-57, "The filtered difference 403 ... data reconciliation module 108"). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made produce a model for to perform estimates of the physical properties similar to the product property estimates 117 of Cardner in order to determine the state of the physical properties over a period of time based on the physical properties produces by the model 110 at steady state.

Regarding claims 2 and 10

Cardner teaches the physical properties include melt index, density, tacticity, molecular weight distribution, xylene solubles, co-polymer composition and production weight (col. 5 lines 33-38, "Product properties for solid ... behavior of gasoline").

Regarding claims 3 and 11

Cardner teaches the steady state modeling means computes values of the physical properties in terms of molecular weight distribution, and the inferential model means correlates at least melt index and density with molecular weight distribution (col. 5 lines 33-35, "Product properties ... particle size distribution").

Regarding claims 4 and 12

Cardner teaches the steady state modeling means further calculates an instantaneous residence time of a reactor in the chemical process (col. 7 lines 7-18, "the simulation models 110 ... equipment PTLF regulatory variables"); and the predicted product property signal 117 calculates cumulative values for the physical properties by mixing the values of the physical properties measure by raw sensor with previously calculated cumulative values of the physical properties

over the residence time as last calculated by the steady state modeling (col. 17 lines 33-39, "the validity check 130 ... corrected flow signals 115").

Regarding claim 5

Cardner teaches the inferential model means utilizes a first order dynamics of mixing analysis with most recent values of the physical properties at steady state provided by the steady state modeling means, to calculate cumulative values of the physical properties (col. 6 lines 49-61, "The preferred method of simulation ... first-principles model is adequate").

Regarding claims 6 and 13

Cardner teaches the inferential model means further receives as input, off-line measured values of the physical properties and adjusts the determined state of the physical properties based on the received offline measured values of the physical properties (col. 7 lines 4-6, "The second type of input ... or computed sources").

Regarding claims 7 and 14

Cardner teaches the inferential model means calculates and outputs values of parameters, of the chemical process, for maintaining the physical properties at a user specified state (col. 7 lines 9-14, "Model calibration adjustment ... stream composition values"); and the apparatus further comprises a process control subsystem coupled to receive the parameter values output from the inferential model means, such that the process control subsystem controls the chemical process according to the parameter values (col. 10 lines 25-38, "One procedure keeps the model ... product properties").

Regarding claims 8 and 15

Cardner teaches the process control subsystem includes sensors measuring physical conditions of the chemical process (col. 7 lines 36-39, "The validity check module ... sensors such as pressure)"); and the inferential model means updates sensor measurements (col. 7 lines 39-45, "These signals are screened ... data reconciliation module 108").

Regarding claim 9

Cardner teaches a method for determining state of physical properties of a chemical process, comprising the computer implemented steps of: rigorously modeling a subject chemical process at steady state, including modeling physical properties of the chemical process at steady state, said modeling providing instantaneous physical property values for a given time, indicative of respective physical properties at steady state (col. 6 lines 40-61, "Input to the simulation ... first-principles model is adequate") but does not specifically teach using the instantaneous physical property values, estimating state of the physical properties over a period of time using a first order dynamics of mixing analysis, such that estimates of the physical properties are dynamically calculated based on a rigorous steady state model. However, Cardner teaches the product property estimates 117 coupled to receive values from the simulation model 110 to produce a corrected stream composition/product property over a period of time based on the model at steady state (col. 13 lines 46-57, "The filtered difference 403 ... data reconciliation module 108"). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made produce a model for to perform estimates of the physical properties similar to the product property estimates 117 of Cardner in order to determine the state of the physical properties over a period of time based on the physical properties produces by the model 110 at steady state.

Regarding claim 16

Cardner teaches computer apparatus for process control, comprising: a steady state modeler for modeling a subject process including physical properties at steady-state, the steady-state modeler providing a steady state model of the subject process (col. 6 lines 40-61, "Input to the simulation ... first-principles model is adequate"); a network communication assembly coupled to the steady state modeler and the inferential sensing member enabling online and user-interactive access to at least one of the steady state model (col. 5 lines 51-59, "applicable to any process 104 ... interconnect via streams"), the dynamic model and parameter values, for enabling control of the subject process (col. 6 lines 56-61, "The simulations should use ... model is adequate") but does not teach an inferential sensing member coupled to the steady state modeler for determining state of physical properties over a period of time, such that a dynamic model of the subject process is formed from the steady state model, the inferential sensing member further providing parameter values for maintaining physical properties at a user specified state in the subject process to effect control of the process. However, Cardner teaches the product property estimates 117 coupled to receive values from the simulation model 110 to produce a corrected stream composition/product property over a period of time based on the model at steady state (col. 13 lines 46-57, "The filtered difference 403 ... data reconciliation module 108"). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made produce a model for to perform estimates of the physical properties similar to the product property estimates 117 of Cardner in order to determine the state of the physical properties over a period of time based on the physical properties produces by the model 110 at steady state.

Regarding claim 17

Cardner teaches the subject process is a chemical process, or polymer process, or physical process carried out in a processing plant (col. 5 lines 51-59, "applicable to any process 104 ... interconnect via streams").

Regarding claim 18

Cardner teaches the parameter values are usable for defining state of equipment forming the processing plant (col. 5 lines 39-48, "The equipment regulatory variables ... composition and/or product properties").

Allowable Subject Matter

4. Claims 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner *Thomas Pham*; whose telephone number is (703) 305-7587 and fax number is (703) 746-8874, Monday-Thursday and every other Friday from 7:30AM- 5:00PM EST or contact Supervisor *Mr. Anil Khatri* at *(703) 305-0282.*

Any response to this office action should be mailed to: **Director of Patents and Trademarks Washington, D.C. 20231**, or **Hand-delivered** responses should be brought to **Crystal Park II, 2121 Crystal Drive Arlington, Virginia, (Receptionist located on the 4th floor),** or fax to the **official fax number (703) 872- 9306.**

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Thomas Pham
Patent Examiner

TP
March 3, 2004

Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121